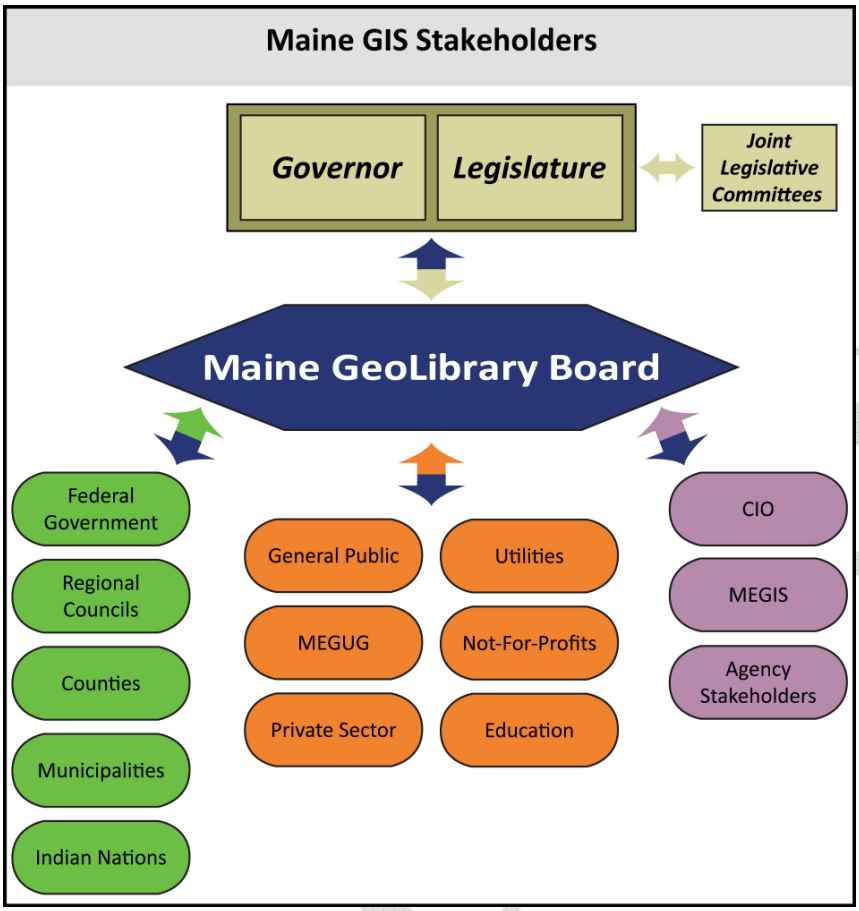
4. CURRRENT SITUATION – NEEDS ASSESSMENT AND REQUIREMENTS ANALYSIS

Maine's Statewide GeoSpatial Program is at a critical juncture. While the GeoLibrary Board, MEGIS, the State Agency Stakeholders and MEGUG have made remarkable progress working together in the past few years, the program has less than $70,000 in its coffers with which to continue. Simply put, the Maine GeoLibrary Board cannot continue to sustain itself without additional financial resources.

4.1 Who Are We?

The geospatial community in Maine is diverse. Geographically, the use of GIS is most pronounced in the southern and coastal parts of the State. However, regional planning organizations, timber related and other industries use GIS in many parts of the State. In particular, there is a broad environmental sector that uses GIS to support its initiatives in numerous parts of the State. There are also significant geospatial programs in both public and private colleges and universities throughout the State. Below is a partial listing of Maine's geospatial community.

- Maine GeoLibrary
- Federal government (including the USGS, NOAA, USFS, USDA, DHS, ACE, NGA, EPA, FEMA, Census Bureau, and NPS)
- State Government (including the CIO, MEGIS and the State Agencies' GIS Stakeholders' Council)
- Regional planning councils and councils of government
- County and local governments
- Academic community (including Bates, Bowden, Colby, College of the Atlantic, various campuses of the University of Maine System such as the University of Southern Maine and the University of Maine at Orono and Machias, and various community colleges across the State)
- Private Sector (including forest management and related timber industry companies, real estate, developers/builders, utilities, surveyors, engineers, GIS consultants and mapping firms,)
- Nonprofit Sector (including social and environmental organizations like the Gulf of Maine Ocean Observing System)
- Research institutions and agencies (such as the Bigelow Laboratory for Ocean Sciences, Maine Maritime Academy, University of Maine School of Marine Sciences, University of Maine's Darling Marine Center, and University of New England)
- Cooperative programs and research projects (such as EcOHAB's Gulf of Maine Program, Gulf of Maine Council on the Marine Environment, Gulf of Maine Research Information System, Island Institute, Lobster Institute, Regional Association for Research on the Gulf of Maine, State of Maine's Coastal Program, USFW Gulf of Maine Coastal Program, and US GLOBEC Georges Bank Program)
- Indian Nations (such as the Penobscot Indian Nation)



4.2 Where Are We Now?

- A Brief Summary of the History of GIS in Maine

  The State of Maine is known nationally as one of the first adopters and most longstanding implementers of GIS in the country. It was also one of the first states to develop a statewide E-911 system. Since the 1980's, Maine has sustained the foresight and its pool of technical and analytical talent to deliver consistent services in spite of chronically scarce resources.

  In 2001, the State commissioned an exhaustive geospatial needs assessment and user requirements analysis to survey geospatial capabilities at all levels of government and to prioritize future activities. In 2002, this plan was completed and resulted in the formalization of the State's GIS oversight in the GeoLibrary when legislation was signed into effect by the Governor. In that same legislative session, a $2.3 million environmental bond issue was created that has served as the prime funding mechanism for the GeoLibrary Board's programs since then. This funding has been wisely spent by the Board in a number of areas. Prime among them is its use to finance the creation of statewide digital orthoimagery matched with a grant from the USGS and the USDA. This geospatial data has been distributed through the GeoLibrary's Geospatial data Catalog and Orthoimagery Viewer (which was developed as a method to gain access to and distribute orthoimagery) to users across Maine. In addition, this funding was used to

create a grant program to enable municipalities to develop digital parcel geospatial data. In all, grants were awarded to 74 communities to create digital parcel geospatial data that met newly adopted parcel geospatial data standards. This funding was also used for the development of the new GeoLibrary GeoPortal and web mapping services, a study of GIS requirements for Maine county government and this update to the Board's 2002 Strategic Plan.

From its inception, the Board has been supported by MEGIS, which provides core GIS services on behalf of the Board and the state agencies (through their GIS Stakeholders Group).

A follow-on study to the 2002 Strategic Plan focusing on GIS needs specific to county government in Maine was undertaken in 2005-2006. Due to heavy involvement by county registries of deeds and emergency management officials, parcel geospatial data was singled out as a vital but missing geospatial data and analysis component at this level. As a consequence of these and other activities, planning for property boundary geospatial data capture and upkeep was elevated among Maine's geospatial strategic and business planning priorities.

In 2006, the Board applied for a grant through the Federal Geographic Geospatial data Committee's (FGDC) Category 3: Fifty State's Initiative program to update its 2002 Strategic Plan and recommend a conceptual framework and functional specification for an Integrated Land Records Information System (ILRIS) for the State of Maine. In 2007, a $50,000 grant was awarded to the State. Later that year, an RFP was issued to perform the work and in 2008 a contract was awarded to the Sewall Team. This document is a result of the strategic planning process undertaken by the State of Maine and the Sewall Team.

In 2007, the Board's Technology Committee solicited the support of the University of Southern Maine to develop a new portal and web services to provide improved access and use of geospatial information across Maine. This technology is scheduled to be rolled out to the public in 2009.

- **The Current Status of the Maine GeoLibrary in Achieving its Vision**
  - ***Vision:*** The "development and subsequent maintenance of an Internet-based GeoLibrary Portal"
    Status: Through the auspices of the Board, MEGIS and the University of Southern Maine, a GeoLibrary Portal is being created, tested and readied for production. Through this and the Board's metadata catalog, they have provided geospatial data search and download capabilities as well as web services. Currently, work is being done with various constituents to gather geospatial data to place on the portal and move forward with its complete rollout, training, and promotion.
  - ***Vision:*** The "stewardship of priority statewide geospatial datasets and the associated technology essential for sharing geospatial data ensuring that State geospatial data is available, up-to-date and accurate"

Status: The Board used the majority of its original funding in conjunction with grants from the USGS and the USDA to create statewide digital orthoimagery in 2004. It also developed a grant program to encourage municipalities to develop digital parcel geospatial data meeting the adopted parcel geospatial data standards. However, because of funding restrictions, this highly successful program has not been able to move forward and, unfortunately, no provisions to encourage regular geospatial data updates were able to be developed. This study has revealed that the most sought after statewide geospatial data sets include updated orthoimagery, statewide parcel, unified roads, and high-resolution elevation geospatial data. These are yet to be achieved by the Board. (Other geospatial data that was seen as important by the State's geospatial community has been delineated in Appendices L-M.)

- ***Vision:*** The "design and implementation of appropriate geospatial data standards to allow it to be used for multiple purposes facilitating the modernization and consistent GIS development of local government land records to make them more accessible and usable by businesses and citizens of Maine"

  Status: Board has worked with MEGIS to complete standards for parcel, land cover, addressing, GPS for addressing hydrography, archiving geospatial data, FGDC compliant metadata, and feature metadata. Some, but not all of these, can be found at: http://megis.maine.gov/standards/. Other, important standards such as roads, open space and land use standards have yet to be completed. Implementation of these standards by the Board has been challenging. As the Board readily admits, encouraging organizations to follow these standards is difficult without creating a financial incentive or a business need for them. However, this study has found that there was little knowledge across the State within the geospatial community of the existence of these standards.

  The Sewall Team believes that significant improvement by the Board in documenting these standards (and/or their status in development), making them readily available to the public and, in particular, promoting them could serve to increase their statewide adoption.

- ***Vision:*** Support "for smart growth and growth management with geospatial datasets and techniques that enable state/county/municipal governments to effectively plan land use, location decisions, and site designs in a way that will minimize negative impacts on the social, economic and environmental health of Maine"

  Status: The 2002 Strategic Plan called for the creation of a "development tracking tool development suite," little progress has been made in this area. In the defense of the Board, other priorities needed to be completed prior to moving forward with this initiative. These included statewide parcel, zoning, conservation/open space, land use and zoning geospatial data.

- ***Vision:*** Multi-organizational "geospatial data-sharing that results in significant savings in the cost of creating and maintaining geospatial data;"
  Status: The GeoLibrary web site provides access to state agency geospatial data, digital orthoimagery and municipal parcel geospatial data developed through the parcel grant program. As such, it serves an extremely valuable service to the geospatial community in Maine. However, much of the geospatial data on the site is not kept up-to-date on a regular basis by the state agencies. In addition, these same agencies admitted in the forum held in Augusta that more state agency geospatial data was withheld from the GeoLibrary site than was included in it. It would seem that this is an ideal opportunity for the Board to work with the CIO and the state agency stakeholders to implement a policy to provide the latest geospatial data to the GeoLibrary on a regular basis. It should be also noted, that, by policy, other than the geospatial data developed through the parcel grants program, there has been no local geospatial data made available through the GeoLibrary's websites.

  Participants in the forums from state agencies noted that, by seeking out and providing local geospatial data or links to it, significant savings can be realized for state agencies which require this geospatial data regularly as well as the vast majority of the Maine geospatial community.

  (It is suggested that this situation could be significantly improved by enlisting the support of the CIO and the Governor's Office to develop geospatial data sharing policies and regularly go out to state agencies and local government to encourage them to update their on-line geospatial data.)
- ***Vision:*** Budgeting "that prioritizes the strategic importance of geospatial information, its maintenance and dissemination;"
  Status: The Board's annual report (http://maine.gov/geolib/Annual%20Reports/annualreports.htm) clearly prioritizes the Board's funding needs to meet its strategic initiatives. Unfortunately, this report has not been widely distributed or shared with potential supporters. In addition, other than a request for additional bond funds in 2007 and, again, in 2008, it does not appear as though a formalized process has been used by the Board to apply for operating or capital funds.
- ***Vision:*** Promoting "innovative uses of public geospatial information that fosters economic development; and implementing education and outreach programs that advocate for the further development of Maine as a national center for GIS research, education, and industrial growth."
  Status: From an objective perspective, the Board appears to be doing little promotion of innovative uses of public geospatial information. In addition, it does not seem to be directly implementing much in the way of education or outreach programs. This appears to be supported in its 2007 Annual Report, where it reports that it had a booth at one conference that year which had 75 visitors. However, the Board now appears to be eager to engage this issue and was active in obtaining good participation for the public forums for this study. Nevertheless, at present, this area remains a significant weakness.

- Summary of Maine's Current Status with the NSGIC Coordinating Criteria
  In 2004, NSGIC and the FGDC conducted a study of the most successful state GIS coordination programs across the country. That study identified nine characteristics that were common in each successful state program (http://www.nsgic.org/hottopics/fifty_states.cfm). NSGIC described its rationale for states to meet these criteria as follows:

  "There is a critical need to coordinate GIS activities on a statewide basis to eliminate waste and improve efficiency in government. Agencies at all levels of government need to coordinate with other stakeholders to keep from duplicating geospatial data and systems at taxpayers' expense. Those stakeholders include non-profit organizations, academia, business and utilities. The "right" solutions will vary state-by-state and they are created through the development of effective strategic and business plans.[1]"

  The chart on the following page depicts a summary of Maine's current status of NSGIC's Coordinating Criteria. The summary of the status of the State of Maine in meeting the NSGIC Coordinating Criteria in 2008 has been developed subsequent to receiving input from the GeoLibrary Board, the Project Team and the Maine geospatial community. The Sewall Team notes that this evaluation is somewhat different from the one done in 2004 and published in 2005 (Fifty States Initiative Action Plan). This is primarily because of changes in personnel, expenditures of funds available in 2004 and shifts in areas of focus in MEGIS.

  Maine has an extensive history of embracing mapping and GIS across the State. As such, it meets many of the NSGIC coordinating criteria (refer to Appendix O for detailed descriptions of each criterion). In 2002, Maine became an early adopter of the use of strategic planning and has continued through this project as an active proponent of that practice.

[1] http://www.nsgic.org/hottopics/fifty_states.cfm

Maine's Current Status with the NSGIC Coordinating Criteria		
Criteria	**Current Status**	**Description**
Strategic and business plans	Meets	Developed: 2002 Strategic Plan; 2006 County Needs Assessment; & 2008 Strategic Plan update.
A full-time paid GIS coordinator and staff	Partial	MEGIS provides staff & infrastructure support; Maine does not have a statewide GIS coordinator.
Clearly defined authority and responsibility for coordination	Meets	Legislation provides authority & responsibility for coordination to the GeoLibrary Board.
A relationship with the chief information officer	Meets	The Board has a good working relationship with the CIO; the CIO is represented on the Board by the Director of MEGIS.
A political or executive champion is involved in coordination	None Currently	None Currently
A tie into national programs	Meets	The Board works closely with its USGS liaison to provide close ties to national programs.
An inter-governmental working environment free of "turf wars"	Partial	The Board provides a working environment within Board activities that allows multi-sector representation and is significantly free of turf wars. Outside the Board activities, some turf wars exist within government operations.
Sustainable funding mechanisms	None Currently	Only funds remaining from the 2003 Bond issue.
Contracting authority and cost sharing mechanisms	Meets	Contracting for Board activities is generally provided by MEGIS.
Statewide coordination efforts that can be a conduit for federal initiatives	Partial	The Board maintains a close working relationship with the USGS Liaison in Maine and acts as a conduit for its federal initiatives. However, the Board has limited statewide coordination activities outside of past geospatial data development initiatives.

Statewide GIS coordination efforts fall under the responsibility of the Maine GeoLibrary Board. It has a good working relationship with the CIO. MEGIS, which falls under the CIO, provides staffing and significant support to Maine's GeoLibrary Board. That support includes providing contracting authority as well as many administrative functions of which other states might be very envious. Maine also has an extremely close working relationship with its USGS liaison and the MEGUG, which serves as the state GIS association. These relationships have been key to the many things that the State has been able to accomplish with limited financial resources in past years.

Although the CIO (and, therefore, MEGIS) has the authority to do statewide GIS coordination, because of its limited resources, MEGIS is under clear direction by the CIO to concentrate its efforts on the coordination of GIS activities across state agencies only. Herein is one of Maine's major stumbling blocks for effectively performing statewide GIS coordination as there is no one individual responsible for it or paid to do it on a full-time basis. In most states that effectively perform GIS statewide coordination, there is a state council similar to Maine's GeoLibrary Board representing various constituencies and sectors. The council is responsible for setting policies and defining initiatives that a State GIS Coordinator implements through the state office of GIS. Although there is always an inherent conflict for the state office of GIS on performing its duties for state agencies versus performing state coordination functions, in many cases, better state coordination leads to significant benefits for state agencies in the long run.

The Maine GeoLibrary Board, which consists solely of dedicated volunteers from across the State, is truly unable to put the effort needed to perform day to day coordination activities and have the ability to manage its initiatives efficiently without additional support. The 2007 the National States Geographic Information Council State Summary indicates that 42 of the respondents have or plan to have within 18 months a full-time GIS Coordinator that has the authority to implement the state's business and strategic plans. In order to successfully coordinate GIS activities across the State, implement its initiatives, insure better communication throughout the GIS community and its various stakeholders, and stay competitive with the rest of the nation, Maine needs a full time individual who is charged with that responsibility.

The last two criteria not yet discussed include having a political or executive champion who is involved in coordination and having sustainable funding mechanisms. The Board has clearly recognized that it does not meet either of these criteria and made it a point to request that particular emphasis be placed on them as well as better statewide coordination in this plan.

Past experience by members of the Sewall Team as well as a review of successful GIS coordination programs across the country has shown that having a champion and having sustainable funding mechanisms are closely linked. Maine's previous experience in obtaining $2.3 million in bond funds resulted from support from then Governor Angus King and the Director of the Maine State Planning Office Evan Richert. Since then, the Board has concentrated its efforts primarily on implementing various statewide GIS programs using those funds through Board members and MEGIS. In the meantime, it

has been able to pay limited attention to the need to cultivate champions in the State for its long-term success. Indeed, the extent of the problem became apparent to the Sewall Team when only 3 individuals acknowledged that they had heard of the Maine GeoLibrary Board in the first forum in Auburn. Clearly, outreach, communication and the involvement of key individuals outside of the Board in its initiative is vital to gaining increased support for its valuable programs.

While the Board has correctly concentrated on providing framework geospatial data and infrastructure to support the Maine Geospatial community, it must now look at demonstrating how its work is tied to providing everyday solutions to the citizens, governments, private industries, not-for-profits and academia in the State to be successful.

As noted above, the Board received $2.3 million bond funds in 2002, which has been prudently used on planning, geospatial data and infrastructure initiatives. Operating expenses and on-going infrastructure costs to support the Board are currently provided by MEGIS. However, since MEGIS operates as a fee-for-service organization, the CIO has expressed desire that funding be provided to cover the operating costs of the Board. In addition, the Board has new operating costs for its soon to be released portal a well as capital expenses for geospatial data development and maintenance costs for its framework geospatial data and application development. It is clear that the Board needs to explore the opportunities to obtain funding through multiple sources including but not limited to the state budget, bonding, service fees, and grants.

- Status of 2002 Strategic Pillars
  The five pillars denoted in the 2002 Strategic Plan are:
  1. Development of Detailed Geospatial data Standards
  2. Geospatial data Warehousing Infrastructure Improvements
  3. Additional Investment in Statewide Geospatial data Development
  4. Targeted Application Development
  5. A Program for Expanded GIS Education, Outreach and Coordination

  The Board through MEGIS has made a great deal of progress in Pillars 1-3. Geospatial data standards for a number of geospatial data sets have been created, geospatial data warehousing and other significant infrastructure have been developed and continue to be improved by MEGIS, and digital orthoimagery has been completed from the 1997-1998 imagery as well as the 2003-2005 program. In addition, with the advent of the new portal, a significant portion of Pillar 4 has been completed as well.

  However, there are still some major challenges that the Board faces in order to complete the items included in all the pillars. For instance, knowledge of state standards is somewhat limited in the State and adoption has been slow unless the standard has been reinforced through a funded program such as the Board's parcel geospatial data program. In addition, some of the standards that have been completed were difficult to locate and did not appear on the GeoLibrary's site. Also, geospatial data currently associated with the GeoLibrary only includes state agency geospatial

data, imagery and some parcel geospatial data derived through the Board's parcel development program. Furthermore, geospatial data included is not updated on a regular basis. The Board has realized that the omission of local and other geospatial data is a significant issue and will be addressing it through their portal.

Lastly, while the Board has made good progress on most of the pillars, they have made little progress on Pillar 5, which deals with a program for expanded GIS Education, Outreach and Coordination. Both items listed as tasks under that pillar require significant funding and the Board has been unable to get either of them funded to date. However, this plan provides a number of no or low cost initiatives that can be under taken by the Board to greatly improve GIS coordination within the State. (Refer to Appendix D.)

A detailed report on the status of the 2002 Strategic Plan Pillars has been developed and is available in Appendix A.

- Status of Board's Current Legislative Actions
  The Board currently has no legislative actions in process.

4.3 Inventory of Existing Efforts, Infrastructure, Sustainability Assessment

- Statewide Coordination/Outreach
  An extensive discussion of the need for improvement in its statewide GIS coordination and outreach by the Board has been noted previously. However, in 2008, taking advantage of this study, the Board has made significant efforts to reach out to the geospatial community in Maine. In the late winter at the Board's request, Sewall Team members participated in the Maine Society of Land Surveyors' Annual Meeting and the Maine Municipal Association's Technical Conference to discuss the project and solicit involvement. During the fall as the project progressed, the Sewall Team was asked to meet with the Maine GIS Users Group and the Maine County Commissioners Association to bring them up-to-date with the project and obtain their input. In addition, in the spring of 2008, the GeoLibrary Board, as part of their efforts to respond quickly to geospatial data gathered through this study, initiated a statewide GIS List Serve to improve communication throughout Maine's GIS community.

- Sustainable Funding
  In 2007, the Board applied for, but did not receive, bond funds to meet its needs. Subsequent to receipt of geospatial data from the study and recognizing that a number of funding sources are needed to meet its needs, the Board modified its request for bond funds in 2008. It is unknown at the time of this writing if funds will become available from this source. Nevertheless, if this proposal is not approved, the Board will have less than $70,000 in funds with which to continue operations.

- Geospatial Data Standards
  A number of geospatial data standards have been completed. These include a parcel geospatial data, land cover, addressing, GPS (for addressing), hydrography, archiving geospatial data, FGDC compliant metadata, and feature metadata. Detailed information on the adopted standards can be obtained at:

http://maine.gov/geolib/Policies/policies.htm. (A description of the State's progress with regards to standards is available in Appendix A.

- Infrastructure
  MEGIS is an office within the Office of Information Technology. It hosts an SDE database, ArcIMS (which is made available to the public), ArcGIS Server, and MapServer. This includes the Maine's Geospatial data Catalog and Maine Aerial Photography Viewer. The ArcGIS Server and MapServer provide services specifically for the state agencies only. In addition, several state agencies host their own environments. Chief among them are the environmental agencies (in particular the Department of Environmental Protection), the Department of Transportation and the Department of Health. MEGIS has established an enterprise license with ESRI to allow all agencies to take advantage of the ESRI software. (Additional information can be attained from the "State of Maine Information Technology (I.T.) Environment" document: www.maine.gov/oit/architecture/Som_IT_Env.doc)

  Through the auspices of the GeoLibrary, MEGIS and the University of Southern Maine, a portal has been developed and is being brought on-line. It will provide a substantial improvement for statewide services by allowing improved access to geospatial data. It will provide both state and non-state organizations with the capability to store geospatial data, provide an easy metadata builder and provide geospatial data downloads as well as web services for all using it. This will be a huge benefit for the whole state and will provide the potential for a major growth of geospatial technology in Maine. This portal is being hosted through the infrastructure at the University of Southern Maine and is a great example of how the State is taking advantage of the robust infrastructure available through both the public and private higher education system in the State.

  At the local government level, the use of GIS is predominant in the southern part of the State as well as along the coast. Inland, its use is generally less with the exception of the major cities. In some cases, regional planning agencies and councils of government such as the Northern Maine Regional Planning and Development Organization have taken up the mantel of providing GIS services and training for the smaller and more rural communities.

  One of the limiting factors in the growth of technology in Maine in the past has been the lack of broadband access to smaller inland and northern communities. This is gradually changing. In particular, it should be noted that public schools throughout the State are connected by a robust network.

  Not-For-Profit's and federal agencies in Maine use geospatial technologies to support their environmental monitoring and other operations as well.

- Statewide Geospatial Data Development
  The Maine Geospatial data Catalog includes 140 geospatial data layers. Key statewide framework geospatial data such as digital orthoimagery has been developed through

the auspices of the GeoLibrary. Working in a funding partnership with the USGS and the USDA, the GeoLibrary put together a project to have imagery flown in 2003-2005. In addition, through a series of GeoLibrary grants to local governments, cadastral geospatial data was developed for 74 municipalities in the State. Other statewide layers developed include roads. The Department of Transportation maintains a statewide file of roads to support their maintenance operations. The Maine Public Utilities Commission also maintains a separate E-911 geospatial database with up-to-date roads and addressing geospatial data. The State contains many active not-for-profits. They have succeeded in putting together land cover for much of the State.

- Application Development
  GIS application development at the state agency level is done both by the agencies directly and by the Office of Information Technology on a fee-for-service basis. Most active in their use of GIS are the environmental and transportation agencies with some development by the health sector agencies. There appears to be little GIS application development or use by public safety agencies such as the police, Guard and emergency management agencies. Generally speaking, there are few on-line geospatial applications that provide services or information for the public. A prominent exception is the Department of Environmental Protection (DEP). DEP also uses Google Earth to provide access to 15 different geospatial data sets for public consumption. In addition, MEDOT brought a Google Earth application this fall to assist the public in obtaining directions to state parks, polling places, and state offices, etc. There would appear to be significant room for improvement by state agencies in using on-line geospatial technologies to improve their accessibility of services to the citizens of Maine by following DEP's model for on-line access of geospatial information.

  Another area for consideration, which was suggested during the study, is the improvement of application development within state agencies as well as between them through the use of modular programming. This approach would permit the reuse of program parts to aid in the more rapid development of geospatial solutions. In order for this approach to be successful, it requires very close coordination between developers and its actual benefits must be analyzed carefully prior to full implementation in order not to significantly impede some application development.

Encouraging application sharing among municipal communities could be a significant benefit across the state.

At the local government level, on-line geospatial applications have been developed by several of the larger communities in the State. Communities like Auburn, Lewiston, South Portland, Ellsworth, Brunswick, and Biddeford have on-line geospatial applications. The City of Portland provides maps for download to citizens in a PDF format. In one of the forums, the participants made it clear to the Sewall Team that encouraging application sharing among municipal communities could be a significant benefit across the state. This is a low cost initiative that the Board can easily pursue.

Universities, through outreach programs such as the University of Southern Maine and the GIS Lab at the University of Maine at Machias, provide GIS services as well as application development to local communities as well.

- GIS Education
  Maine's higher education community has several active GIS curricula in both their well-known private and public colleges and universities. On the private school side, curricula at Bowdoin, Bates and Colby as well as others contain GIS programs. On the public education side, many GIS programs are provided on university campuses as well as community colleges.

  Currently, Tora Johnson from the University of Maine at Machias is leading a project which received a $750,000 grant from the National Science Foundation to study the educational needs of GIS users across the State so as to determine how the University can better meet those needs. Mathew Bampton of the University of Southern Maine and other academic professionals are working with her to establish a virtual campus between several universities and community colleges. This virtual campus will make the expertise and resources that are found across Maine, but not necessarily located on one campus, available to those students across the state who seek to learn more about GIS.

  In the elementary and secondary school arena, there appears to be limited-to-no mention of GIS in the curricula or use by teachers in the classroom to enrich the learning experience for their pupils. Investment in this area can yield longer-term dividends for students, teachers and the overall educational process.

  It is noted that the Maine Learning Technology Initiative provides laptops to all middle school children in Maine and includes the software package "My World" with it. In addition, several rounds of teachers have been to training provided by the Institute for the Application of Geospatial Technology (IAGT). The Board might wish to establish a program to train additional teachers in the use of GIS as a learning aid. Programs similar to "Teaching with Spatial Technology" (http://www.iagt.org/twist/) are designed to teach K-14 teachers in the US how to use Geographic Information Technology (GIT) in the classroom. The Board could consider using such programs to establish a cadre of public school teacher in Maine by working with MEGUG to establish a scholarship program to send teachers to training and then using those teachers to teach others and encourage the use of geospatial technology in the classroom.

- Sustainability Assessment
  Simply put, the Maine GeoLibrary Board cannot continue to sustain itself without additional financial resources. While it is clear that there are a number of steps that can be taken to improve GIS coordination across the State of Maine, the major cost savings available to Maine are in the development of up-to-date, accurate statewide framework geospatial data and in providing accessibility to that and other geospatial data from across the State through such infrastructure as the Geospatial data Catalog, the Orthoimagery Viewer and the GeoLibrary Portal. With resources to provide those

infrastructure assets, the GeoLibrary Board can make geospatial tools available to state, county, and local government so that they serve their constituencies better and more efficiently; not-for-profits so that they fulfill a host of environmental and social needs; private citizens so that they gain access to and transparency in government; tourists so that they can plan scenic trips to the State; and businesses so that they can locate, build and thrive in Maine.

Maine's Statewide GeoSpatial Program is at a critical juncture in its development. While the GeoLibrary Board, MEGIS and the State Agency Stakeholders have made remarkable progress working together in the past few years, the program has less than $70,000 in its coffers with which to continue. The development and release of the portal in this coming year is a major step forward. Nevertheless, it will need modifications and improvements over time, and significant resources will be required to educate communities on the benefits of having the portal host their geospatial data, to develop web service templates that meet their business needs, and to assist them in taking advantage of the benefits that this technology can provide. Also, there is a significant need for creating and maintaining statewide geospatial data. This starts with a program for new orthoimagery and parcel geospatial data. It includes new high-resolution elevation geospatial data as well as a unified roads and address geospatial data set. All of these items are essential for the statewide community if Maine is to stay competitive with states across the country. Currently, the annual cost to the State of Maine for web and portal hosting as well as geospatial data storage and two part-time staff from MEGIS is approximately TBD. Capital costs for geospatial data development and development of web service templates are estimated at TBD over the next five years. In addition, the State is in great need for an individual working under the auspices of the GeoLibrary Board as a Statewide GIS Coordinator who would assist in implementing a robust GIS Coordination Program as well as in managing the implementation of the GeoLibrary's initiatives. Finally, an individual who can assist communities in posting their geospatial data and obtaining updates on a regular basis is badly needed as well. These two positions would add approximately TBD to the Board's annual operating expenses. The total budget for this plan is included in Appendix H.

5. PROGRAMMATIC GOALS & OBJECTIVES AND ROAD MAP STRATEGIES (HOW DO WE GET THERE?)

The Sewall Team is recommending that the Board engage in an implementation strategy that uses multiple work groups focusing on each of the major need areas identified in the study.

Section 3 of this study identified the mission and vision that the Board has developed for Maine's GeoLibrary. Section 4 then reviewed the progress that the Board has achieved in meeting its vision. Specifically, the study focused on Maine's progress in moving forward with minimum funding on the initiatives outlined in the 2002 Strategic Plan and its status in aligning itself with the NSGIC coordinating criteria. In addition, it described the needs identified by Maine's geospatial community through open forums held across the State as well as through an on-line survey. Generally, the needs identified by the geospatial community complement the vision that the Board has for the GeoLibrary quite nicely. However, they also help to bring focus to the specific challenges that Maine's geospatial community is facing on a daily basis as well as identify areas where the Board can have positive impacts for the community in a short timeframe with minimum cost.

In order to best meet Maine's geospatial needs, the Sewall Team is recommending that the Board implement a strategy using multiple work groups focusing on each of the major areas that have been defined by the user community, the 2002 Strategic Plan and the Board itself. We believe that this approach will provide the Maine GeoLibrary with the best opportunity to achieve its vision.

The situation facing Maine's GeoLibrary's Board is not unlike what other states are presently experiencing or have experienced in the past. The approach that the Sewall Team is recommending has proven successful and sustainable. It involves sustained effort, commitment to the process, and the willingness to seize opportunities that present themselves. While it can be challenging, ultimately it can be deeply rewarding and fun for those fortunate enough to be able to participate in it.

The overall plan is straightforward. The Board needs to establish an on-going program to provide new statewide geospatial data and maintain that geospatial data on a regular basis. This geospatial data needs to meet the needs of both state agencies and local government in order to eliminate redundancies and save costs for all. In addition, the Board needs to provide better access to state agency and local government geospatial data as well as offer the opportunity for academia, not-for-profits and the private sector to make their geospatial data available through its Geo Portal. The Board also needs to put forward a significant effort to coordinate geospatial data and application development, training, and other activities across the State. Finally, the Board needs to promote the use of GIS to those outside the geospatial

community to save money and improve services in both the public and private sectors across the State.

In order to accomplish this, significant capital and operating funding will be required by the Board. Given the current and the near term fiscal situation[2], obtaining funds will be extremely difficult. However, that doesn't mean that it will be impossible with the right assistance. First and foremost, people both inside and, more importantly, outside the geospatial community must understand the importance of the work that the Board is doing. Without a doubt, the Board must:

1. Gain greater exposure for its programs and accomplishments;
2. Include a much larger pool of individuals and organizations in its activities who, in turn, can intelligently discuss what is being done by the Board; and
3. Have Board Members, themselves, act as ambassadors for the Board to the constituencies that they represent.

A key advantage for the Board is its impending rollout of the new GeoLibrary Portal. This portal will provide a place where local government, not-for-profit, academic and private sector geospatial data can be stored, easily accessed for download and used via web services. This technology has the potential to assist the Board in solving key geospatial data storage and access problems for multiple users from around the State. And, with the development of application templates, the portal will enable the Board to provide some simple-to-use applications for local governments. This will allow local governments who choose to take advantage of this service the opportunity to gain benefits from GIS to solve their business needs without having to purchase anything more than a computer with Internet access and a browser. It will also encourage them to provide the portal with up-to-date local geospatial data that meets Board standards – a win-win for all.

The Board must start the process by completing the portal, getting select geospatial data into it and promoting its use across the State. The Board must also provide easily accessible training opportunities to targeted communities and others around the state. In addition, it must execute a communications plan similar to the one that the Sewall Team has provided the Board (see Appendix E) and demonstrate to the State's key decision makers how GIS can be used to solve the real business problems facing the State and its citizens. The Board must also work with those decision makers to develop the business cases they need to support the Board's needs. Key to making much of this happen is using a more inclusive approach with the GIS community and hiring a statewide GIS Coordinator to implement the major initiatives for the Board. This approach has been detailed in Appendix F. It has been used successfully previously and that success has been documented in:
(http://www.ctg.albany.edu/publications/reports/new_models)

5.1 Coordination, Funding and Support/Leadership Strategies

- Statewide Coordination

[2] "Experts in government finance say most state and local governments can expect at least another two years of revenue shortfalls," Associated Press, Albany Times Union, November 14, 2008.

In its role as a statewide coordination organization, the geospatial community in Maine is looking for the Board to:

1. Improve statewide geospatial data access and development;
2. Lower the cost of entry into the GIS arena for local government;
3. Facilitate communications on GIS activities, opportunities, across the State; and
4. Promote the use of GIS to prospective users and potential supporters across the State.

Potential solutions for meeting those requirements include:

1. Improve statewide geospatial data access and development:
   Work to develop policies that encourage state agencies, local governments, academia and not-for-profits and others to complete geospatial data inventories on an annual basis. Post geospatial data and metadata to the data catalog and the GeoPortal as it's developed. Notify the geospatial community when geospatial data updates are made and invite geospatial data developers to let others know when geospatial data projects are planned to encourage partnerships and sharing.
2. Lower the cost of entry into the GIS arena for local government:
   Implement the Board's plans to house geospatial data from both state agencies and sources other than state agencies on the portal. Develop easy-to-use web service applications for the portal which meet the business needs of local government and make those available to local governments who host their geospatial data on the portal.
3. Facilitate communications on GIS activities, opportunities, across the State:
   Grow the GeoLibrary List Serve. Encourage its use to announce activities, training opportunities, grants, new geospatial data updates, new Board initiatives and updates on on-going ones. Update the web site weekly. Post the annual geospatial data inventories. Create a "Calendar of Events," an "Educational/Training" section, and a "What's New" section on the web site.
4. Promote the use of GIS to prospective users and potential supporters across the State:
   Develop an annual calendar of speaking engagements across the State that targets both technical and non-technical conferences, meetings, and seminars. Schedule different Board members and others to provide the presentations. Develop a cadre of PowerPoint slides that describe the GIS and its ability to bring results by assisting various sectors in meeting their business needs. Include slides that demonstrate how the Board, through its initiatives, is making a difference in Maine. Target groups and individuals who can provide the support to move the Board's initiatives forward.

The entire list of issues revealed during the study and potential solutions/action items relating to them is depicted in the "Overall Maine GeoSpatial Listing of Issues and Action Items" in Appendix D.

- Geospatial Champion(s)
  One of the key characteristics of successful statewide GIS coordinating programs is having champions that actively promote GIS and assist in obtaining funding for their

coordination program's initiatives. (Reference NSGIC Coordinating Criteria – Appendix O.) The Board has recognized this as an issue and has stressed it as a major need. Through the statewide on-line survey, a number of individuals were identified as potential champions for the GeoLibrary. The Sewall Team recommends that the Board consider "cultivating" multiple champions in different sectors. It also recommends that the process of identifying, developing and nurturing champions be not just a one-time effort, but a continual effort by the Board. Lastly, it also suggests the Board consider having an annual planning session with its champions to determine the best approach to attain the resources needed to support its initiatives.

Working with the Project Team, the following steps have been determined:

1. Identifying potential champions – While a number of the individuals already identified would make marvelous champions for GIS in Maine, they are also sought after by many others around the State as well. Recognizing this, it is suggested that the Board initiate the process by inviting a select number of those individuals to a focus group session, and, using a facilitator, identify more realistic champions that could actively support the GeoLibrary's initiatives and assist in acquiring the required funding.
2. Determining "hot buttons/issues" – Once potential champions have been identified, the issues that are important to them should be listed. Those issues that GIS can clearly assist in resolving should then be noted. Next, the list of champions should then be prioritized based on the influence of the potential champions (individuals or organizations) and the ability of their issues to be resolved using GIS.
3. Recruiting – Once the potential champions have been identified and prioritized, a plan should be developed to recruit them. It is suggested that a few approaches be considered. These include developing a "one pager" discussing how GIS can be used to help achieve the champions' goals, providing a non-technical PowerPoint presentation that delivers the Board's "key message," and/or developing a small, easy-to-understand project that demonstrates how GIS can be used to assist them in resolving their issues and achieving their goals. Lastly, the Board should be prepared to delineate its future needs clearly and how the champions might be able to assist in achieving them.
4. Developing (and nurturing) champions – Once the potential champions have expressed an interest in GIS, the Board needs to be prepared to assist them in locating the resources needed to achieve their goals. It is extremely important that the Board be able to respond quickly to requests that the champions make. The Board may wish to assign a "point person" for each champion to insure that issues are resolved and action items are completed properly and in a timely manner and to provide regular communication with each champion on providing assistance on Board initiatives.

   Additional information is available on this area in Appendix I, "Developing Champions", Appendix E, "Communication Plan," and Appendix D, "Overall Maine GeoSpatial Listing of Issues and Action Items."

- Sustainable Funding
  Almost every state GIS council across the country struggles to obtain and maintain sustainable funding for its operations and initiatives. In the State of Maine, the GeoLibrary has been supported from its inception by funding from bond proceeds. While this approach is generally not regarded as a "sustainable" funding mechanism, it may be the GeoLibrary's best hope for funding in the near term. As such, the Board applied in 2007 and again in 2008 for bond funding to support its new initiatives. In addition, as noted previously, the Board continues to receive operational support from MEGIS (two half-time staff as well as assistance from its director as time permits plus servers, maintenance, and other services) and donated time from Board members. While the CIO continues to support MEGIS and the GeoLibrary, he has expressed a need for funding to cover his annual cost attributed to Board activities approaching $200,000 annually.

  Ideally, the GeoLibrary would have its base operational costs covered every year in the state budget. These would include MEGIS staff and infrastructure costs and any other staff employed by the Board, travel expenses, and maintenance costs for equipment, services, and geospatial data maintenance. Then, when new or additional initiatives arise, the Board would be able to request additional funds in that year's budget (or through bond proceeds, if appropriate) to cover them.

  Additional information is available on this area in Appendix J, "Sustainable Funding."

- Items for Action Now!
  In this current climate of financial crisis, neither bond nor operating funds from the Maine budget may be forthcoming in the next budget cycle. While this may be discouraging, it should also be seen as an opportunity for the Board to dedicate time to building its resume of significant accomplishments and to developing a solid plan with great executive support that will position it in 1-2 years to acquire the funds it needs to proceed with its initiatives.

  The chart on the following page provides a list of items (almost all low cost) which the Board can undertake now to put itself in a strong position to acquire sustainable funding in the future.

Items for Action Now!	
Geo Portal	Fully implement the Geo Portal's services.
Communicate	Use the List Serve and the web site to regularly inform Maine's geospatial community about the Geo Portal. Put notices out on its capabilities through the MMA, County Commissioners Association, and other organizations. Note its capabilities, cost savings and willingness to host geospatial data at no cost.
Local Government Web Applications	Form work groups that include local government to develop easy-to-use web applications that provide needed services for local governments.
Train	Train potential users across the State both in person and on-line on the Geo Portal. Use training as a marketing opportunity for the Board's other initiatives as well as a means to acquire geospatial data.
Geospatial data	Get geospatial data into the Geo Portal by working with state agencies, communities across the State, not-for-profits, academia and the private sector.
Public Relations	List positive statements from users across the State. Perform a survey from the user community to identify the types of different applications supported by geospatial data (like digital orthoimagery). Document those and use on web site and in documents and presentations.
Statistics	Get statistics on uses of the Geo Portal. Look at hits on the Data Catalog and number of downloads as well as the value of the downloads. Consider the money saved in storage, software (web services), and time and effort for geospatial data access that the Geo Portal provides.
Key Message	Put together a "one pager" on the current and potential benefits from the Geo Portal. Discuss potential savings to local government and how the Geo Portal is lowering the barriers for those governments to gain benefits from GIS through the Geo Portal's municipal web service applications.
Communication	Put in place the communications plan provided in Appendix E.
Work Groups	Establish work groups and involve more people.
Increase Statewide Coordination	Increase statewide GIS coordination efforts by undertaking the "no" or low cost" solutions listed in the "Overall Maine GeoSpatial Listing of Issues and Action Items" (See Appendix D).
Document Successes	As the work groups produce deliverables, be sure to communicate these successes to the geospatial community as well as key decision makers.
Target Potential Champions	Target potential champions who will benefit from enhanced geospatial information and who are interested in geospatial information, and work with them to acquire the needed legislative support for the GeoLibrary's initiatives.
Secure Funding	Having documented a resume the successes, work with the legislature, the CIO, and the Governor's Office to secure operating and capital funding streams to support the GeoLibrary's efforts. Also, work closely with a USGS liaison to identify grant opportunities as they arise on an annual basis.

5.2 Geospatial Data Strategies

Improved access to existing geospatial data was of significant importance to many across the State. This potentially can be accomplished with minimal cost.

It was clear from the meetings and the on-line survey that the Maine geospatial community is anxious to receive updated digital orthoimagery for the State. They also want statewide parcel geospatial data, a single uniform roads and addressing file and high-resolution elevation geospatial data for the State. All these require time and funding to varying degrees. Realistically, this funding may not be readily available in the near term. However, of significant importance to many was improved access to much of the existing geospatial data. This potentially can be accomplished with minimal cost. It would include developing geospatial data inventories annually (as noted in Appendix D). It would also include campaigning for geospatial data and metadata to be posted in the Geospatial data Catalog and on the portal as well as putting in place policies that ask geospatial data developers to announce when geospatial data has been updated. If LURC geospatial data, for example, could be posted on-line, it could pave the way for others to be encouraged to post their geospatial data as well.

Geospatial data, such as the roads and addressing, may not require additional funding. Currently, the Department of Transportation produces a geospatial dataset of roads that is used to maintain state roads. At the same time, the Public Utility Commission produces an E-911 roads and addressing file for emergency responders across the State. While both files serve different purposes, it would seem that there is potential for cost savings by creating one uniform file that meets the business needs of both. Given the current economic condition in the country, the Board should consider using this as an opportunity to combine these geospatial data sets to reduce state costs.

As noted above, the need for statewide parcel geospatial data as well as new digital orthoimagery were some of the most requested items in the public forums and on-line survey. Both of these require significant funding to implement, but both are greatly needed to help the State of Maine remain competitive with other states. It is suggested that a geospatial data work group be assembled (refer to Appendix F on work groups) to review the needs of both state, local government and non-government organizations.

It is recommended that any statewide digital orthoimagery program put in place follow the guidelines for the Imagery for the Nation Program that the USGS and NSGIC are proposing. This would include providing coverage that is affordable and meets state agency needs and allowing local government to pay the incremental cost for improvements to the imagery to meet their needs. This would help insure that the program is relevant to all and eliminate the need for local government to purchase orthoimagery geospatial data at a cost that may be double what the State could purchase it for through a statewide program. It should also be noted that the Board has an on-going survey to capture uses of orthoimagery. This information should be provided to the work group as part of their analysis in establishing any new orthoimagery program.

As each geospatial data set is developed, a long-term plan for updating it must also accompany it. In the case of the orthoimagery program, the Sewall Team would advocate a yearly update of a portion of the State on a rotating basis to keep the cost constant yet meet the needs of the people.

While the top four geospatial data needs include orthoimagery, parcel, uniform roads and addressing, and high-resolution geospatial data, a number of additional valuable geospatial datasets were also requested. This listing is included in Appendices L-M. As the opportunity presents itself, the Board should plan to develop this geospatial data and put in place a maintenance program for each.

5.3 Technology Strategies

The Board's current initiative of rolling out the portal and providing web services establishes a solid foundation to meet a number of the needs of the Maine geospatial community. The Sewall Team recommends the development of web service templates to deliver easy-to-use applications to municipal governments, providing them the advantages of GIS without requiring significant infrastructure, training, or costly software. It also suggests that the Board consider the development of Google Earth applications to deliver geospatial information to citizens in a widely used format in a manner similar to that which the Department of Environmental Protection is currently using.

5.4 Standards

It is recommended that the standards listed in the 2002 Strategic Plan (refer to Appendix A) and noted in Appendix D as currently not complete be completed by the geospatial data work group in conjunction with the Policy Committee in accordance with the project plan in Appendix G. It is also recommended that the parcel standards be reviewed by the ILRIS work group in collaboration with the Policy Committee to determine if they require updating to meet the needs of the proposed Integrated Land Records Information System.

5.5 Organizational

- Executive Support
  The Board enjoys support from Richard Thompson, the CIO. He continues to provide part time staffing support from MEGIS for the Board. Michael Smith, the Director of MEGIS, who represents the CIO on the Board, actively supports the Board as well. Nevertheless, it has been made clear that the Director of MEGIS' role is to support state agencies and not to do statewide GIS coordination. As such, a significant gap exists for statewide coordination and for aligning the GeoLibrary with the NSGIC coordinating criteria. The GeoLibrary does not appear to have a close relationship with the Governor or the Legislature at this point. That is an area that the Board needs to work on over the next year.

- Coordination and Oversight Procedures
  There are a number of coordination issues that need addressing by the Board for the State. These are identified and solutions for each have been proposed in Appendix D. In order to implement the solutions for these issues, the plan requires the formation of a Coordination Work Group (refer to Appendix F) to develop detailed plans for the best way to implement each solution and to assist the Board in its implementation. In

addition, it is strongly recommended that the Board hire a statewide GIS coordinator reporting directly to the Board who can:

1. Serve as a program manager/executive director to implement the Board's initiatives;
2. Coordinate GIS activities across the state;
3. Represent the Board in meetings with groups; and
4. Help to coordinate work group activities for the Board.

(The Sewall Team would point out that a statewide GIS coordinator is one of the key items for success noted in the NSGIC coordination criteria (refer to Appendix O).)

Should the Board be unable to hire a statewide GIS coordinator, the management of the work groups and the implementation of the solutions will have need to distributed between the Board (or its designee(s)) and the work groups' leaders.

- Policy
  As there are a number of significant policy and standards issues that greatly impact this plan, it is recommended that the Policy Committee work with the Coordination Work Group, the Geospatial data Work Group and the ILRIS Work Group to develop the various policies and standards noted in Appendix D.

- Staffing
  This plan suggests that the Board obtain two additional full-time staff to implement its programs. First and foremost is a state GIS coordinator. As noted above this person can serve as the spokesperson for the Board to individuals and organizations across the State. More importantly, though, this person will serve as the program manager and executive director to implement the Board's initiatives. This plan requires heavy involvement from volunteers from the Maine geospatial community and from others across the State. This methodology can be highly successful, but it does require a significant amount of coordination and facilitation. Having a staff person to oversee these initiatives for the Board will help to move them forward much better. It is recommended that this person be energetic, have good interpersonal skills, be a good project manager, good facilitator, and, if possible, have knowledge of the Maine geospatial community. Ideally the Board would be able to acquire funding and the ability to fill that position. If not possible at this point in time, the next preferable solution would be to hire a person via contract. Lastly, the Board could look at the possibility of borrowing such an individual from an agency in state government.

  A second person is also requested to primarily work with the development of geospatial data for the implementation of the ILRIS program. However, we would also recommend that this person be responsible for working with local governments to bring geospatial data and metadata into the portal on a continuing basis to insure its success.

- Budget Requirements
  The budget requirements have been delineated in the "Budget for the Maine Strategic Plan," located in Appendix H.

- Outreach
  Outreach is an area in which the Board must make significant improvements if it is to be successful in moving forward with its initiatives and obtaining funding for them. This need and solutions to the issues are covered in significant detail under the Communications Plan (Appendix E) and in the "Overall Maine Geospatial Listing of Issues and Action Items" in Appendix D.

- Risk Assessment
  The risk of the GeoLibrary Board not taking decisive action immediately is significant. The Board is quickly reaching a position in which it will have no funds with which to operate. It can't continue indefinitely without additional funding, so building a case to obtain that funding is paramount.

  Given the current economic situation that states are facing, success in obtaining a large amount of new funds seems distant. However, even in a time period in which the country faces a severe economic downturn and funding will be extremely limited, the Board is in a position to do a number of items such as:
  - Developing an on-line inventory of geospatial data sets available across the State;
  - Developing policies to provide access to the latest geospatial data through the Board's web sites;
  - Developing a calendar of events on the website;
  - Developing a training/education section on the website; and
  - Providing training on the importance and use of the GeoPortal.

  Many more no or low cost items needed by the Maine geospatial community are listed in Appendices D, E & G.

  In the end, the risks inherent in the Board not moving forward with these initiatives to improve statewide GIS coordination and communication far outweighs that of the status quo. If the Board moves forward, the Sewall Team is confident that it will be able to build on past successes and demonstrate its relevancy for implementing future initiatives.

6. IMPLEMENTATION PROGRAM

Lessons Learned:

1. **Access to updated State and local geospatial data is one of the major needs that must be addressed.**
2. **Geospatial data creation and maintenance is a need that Maine's geospatial community looks to the GeoLibrary to provide.**
3. **There is a significant need for improved statewide geospatial coordination activities.**

6.1 Lessons Learned

Three areas stood out among the many insights gathered from the participants in this study:

1. In spite of the great service that Maine's Geospatial data Catalog provides, most users feel that **access to updated State and local geospatial data is one of the major needs that must be addressed.** With one exception (parcel geospatial data from the 74 municipalities who received parcel grants), only state agency geospatial data is housed or referenced by the Geospatial data Catalog. In most cases, users feel that the geospatial data in the Geospatial data Catalog is not current. Thus, those in state agencies, local government, not-for-profits, academia, and the private sector must at times go through arduous searches for geospatial data they need to meet their business needs. This is costly, inefficient and frustrating for users and they made that clear in the forums. It must be noted that the GeoLibrary's new portal can be the infrastructure needed to address a significant portion of these issues if significant efforts are made to populate it with up-to-date geospatial data from all sectors.

2. **Geospatial data creation and maintenance is a need that Maine's geospatial community looks to the GeoLibrary to provide.** While the community is very happy with the digital orthoimagery flown in 2003-2004, users from across the State have made it clear that a program that provides regular updates is greatly needed. Other high priority statewide geospatial data that are needed include parcel geospatial data, a single uniform roads and addressing geospatial data set, and high-resolution elevation geospatial data.

3. Over the years, the GeoLibrary has provided the Maine geospatial community with geospatial data and technical capabilities. However, this study illustrated **a significant need for other geospatial coordination activities across the State**. This is an area in which the GeoLibrary Board can greatly improve by facilitating communication. (It should be noted that the Board took the first steps to doing this during the study by updating its website and establishing a statewide GIS List Serve for Maine.) By simply knowing who is working on what projects, what geospatial data is being developed and how to obtain GIS training/education, time, effort, and costs can be saved and new

partnerships can be formed. Maine needs a person dedicated to statewide GIS coordination to address these issues.

6.2 Prioritization of Recommendations

Priority Recommendations

- **Implement the GeoPortal.**
- **Hire a statewide GIS Coordinator.**
- **Establish work groups.**
- **Develop a set of policies for sharing public and private geospatial data including notification of new and updated data and providing access to that data.**
- **Implement the communication plan.**
- **Establish a coordinated campaign to promote the use of GIS.**
- **Perform an annual inventory of geospatial data across the state.**
- **Develop simple-to-use web service templates for municipalities to use through the GeoPortal.**
- **Implement an integrated land records information system.**
- **Create and update statewide geospatial data: orthoimagery, parcel, unified roads, and elevation data.**

Appendix D lists the more than 35 issues that were identified through this study. At first glance, the number of issues to be addressed may look overwhelming. However, many of them are not huge and do not require significant amounts of funding to resolve. All can be important to one or another of the constituencies in the Maine geospatial community. Some require a significant amount of groundwork to move forward. Others do not. In the end, the Sewall Team recommends establishing each of the work groups as noted in the proceeding section and prioritizing work on the issues within each work group. Suggestions for overall prioritization have been made and can be reviewed in Appendix D as well. The highest of these priorities is listed in the box below. The Sewall Team recommends that the Board adopt these recommendations in accordance with their ability to manage the work groups and committees. It would note that the Board's ability to manage these groups is one of the keys to its success in implementing these programs.

As stated previously, the Sewall Team recommends that the Board obtain a statewide GIS Coordinator for the State of Maine. This person could not only represent the Board in meetings and presentations across the State, but also implement the Board's programs by facilitating the work of the Board's work groups and committees. Immediate options to consider for that position are, of course, to obtain a new FTE position and funding, pursue borrowing a staff person on a full time basis from a state agency, establishing a "project" or temporary position, or obtaining funding to contract for this work. Although this system works best with a strong central leadership (i.e., a statewide GIS Coordinator or a project/program manager) driving the multiple work groups, it can also work if Board leadership dedicates time and effort to providing that same strong leadership, assisted by very strong work group leaders.

If management of the work groups and committees becomes a limiting factor, the Board should consider the implementation of the portal through the Technology Committee to be the highest priority. First and foremost, the Board needs to fully implement its portal and develop a program to encourage and assist programs for communities, not-for-profits, academia, the private sector and citizens to post geospatial data and take advantage of it. This should be followed by work in the Communication, Coordination, and, of course, the ILRIS and geospatial data work groups.

Imagery and other geospatial data were noted as significantly important to the geospatial community, but they involve significant funding (or dealing with significant and time-consuming issues such as creating a single, uniform roads and addressing geospatial data set). A number of items can be done in these other areas that will address several of Maine's geospatial issues with little or no funding. In the meantime, working in these areas will demonstrate the Board's effectiveness, build a constituency for the Board through its coordination activities and allow it to move forward with a solid business case to obtain funding for implementing ILRIS and other statewide geospatial data initiatives.

6.3 Implementation of Sub-Projects

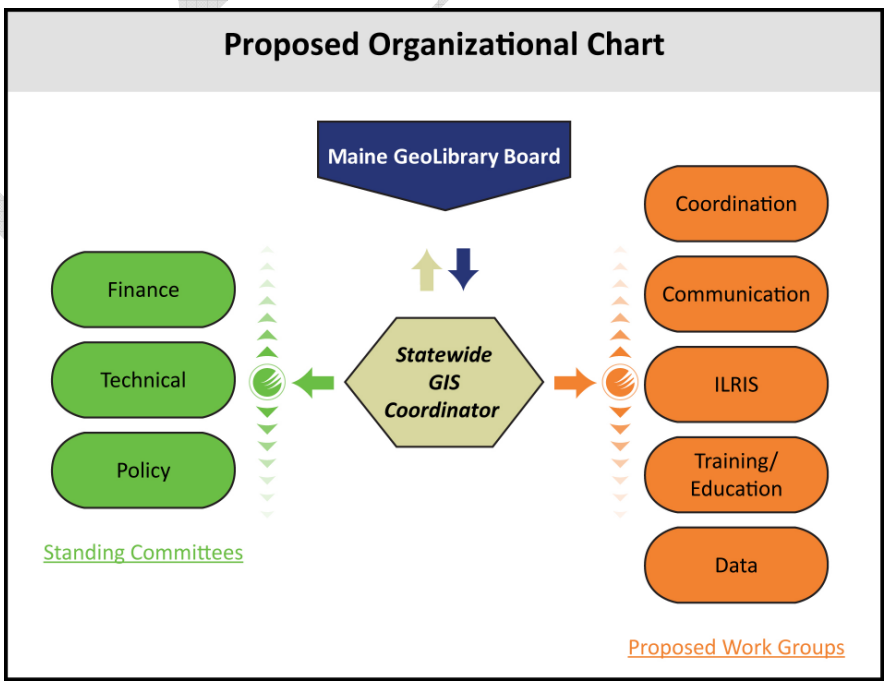
The Sewall Team recommends the use of work groups to implement the various sub-projects identified. This recommendation has been driven by the following imperatives. The Board needs to:

- Increase its coordination activities and secure additional help to do that;
- Improve its name recognition across the State and to attract champions and funding to complete these important initiatives. (Having a larger number of people involved will help to create a sense of ownership for a greater portion of the geospatial community and to "spread the word" on its accomplishments).
- Demonstrate how it is making a significant and measurable difference for Maine. (Successfully taking action on a number of coordination issues as well as implementing a communications plan will be demonstrable steps in this direction (refer to Appendix E).
- Document its accomplishments and plans for going forward. (Between its past accomplishments, these current coordination initiatives and its future plans, the Board should be able to highlight these achievements effectively.)
- Demonstrate to key leaders in Maine how these plans will make a difference for the State. (This documentation should go beyond technology and concentrate on the specific, positive outcomes that these initiatives will have for Maine's citizens and businesses.)

By establishing these work groups, the Board can effectively move forward now and make progress while pursuing opportunities for funding.

- Suggested Work Groups
  The Board currently has three committees. These are the Technical, Policy and Finance Committees. After reviewing the issues noted in the Appendix D, the Sewall Team recommends that the following work groups be established to address them. They are:

- Coordination
  This work group will be charged with such actions as geospatial data inventorying, accessibility and sharing issues; coordinating application development. It is recommended that the Policy Committee work directly with the Coordination Committee to develop policies needed to implement solutions to the coordination issues.
- Communication
  This work group will be charged with improving the flow of information across Maine's geospatial community; providing content to update website content on a regular basis; and insuring that the Board's progress on each of the issues outlined in the Strategic Plan is made known across the State.
- ILRIS
  This work group will be charged with the implementation of the Board's Integrated Land Record Information System.
- Geospatial data
  This work group, working with the Policy Committee, will be charged with developing necessary standards as well as defining the geospatial data needs and flows between local, county, state and federal governments. It shall also take into consideration special requirements that not-for-profits, academia and the private sector may have.
- Education/Training
  This work group is charged with establishing an area on the website to post training opportunities and encouraging trainers to use the GeoLibrary's List Serve to post opportunities. It is also charged to establish links from the website to the higher education sites/curricula from across the State and to work with the university consortium to help meet user-training needs.



It is recommended that the Technical Committee be expanded to include additional members from across the State to assist in defining the application needs of local government. It is also recommended that the Policy Committee work closely with the Coordination Work Group (and constituencies involved) to establish the policies that will be required for its work. Finally, it is recommended that the Finance Committee be expanded to include key figures from across the State that can assist the Board in securing additional funding for its initiatives.

Appendix F, "Using Work Group Collaboratively" details how each of these work groups can be assembled and run and what the keys to their success are. An example of a success story using this approach is documented in "Practice: A Guidebook to Organizing and Sustaining GeoData Collaboratives," pp. 9-17. It can be found at: www.metrogis.org/documents/articles/lessons_entire.pdf. Key to insuring the success of this approach is good project management and coordination of the activities of each work group. While this can be handled by strong management by the Board or a combination of strong management by the Board and the work group leaders, the Sewall Team has recommended that a hire a statewide GIS coordinator or a program/project manager to fill this management role.

6.4 Phasing & Milestones

A detailed plan for the implementation of the initiatives has been developed and is available in Appendix G. It is suggested that the work group project manager and the team leader be allowed to modify this plan as needed while working within the overall time frames provided for deliverables.

6.5 Budget Plan

In the research for this project, it became clear that in order to develop sustainable funding for Maine's GeoLibrary initiatives, multiple funding sources would have to be explored. Maine's initial program received funding from bond proceeds, and unlike many states that do not have such options, it appears to be the most likely option for the State. Below, we have delineated several funding sources. In addition, a detailed budget plan is included in Appendix H.

- Bond Funds
  In the fall of 2008, the GeoLibrary Board submitted a request to obtain bond funds for a number of their initiatives. This included a parcel grant program, an integrated land records program, digital orthoimagery, high-resolution elevation geospatial data, and development of regional service applications. Should these initiatives receive that funding, it would provide them with significant work for the next few years.
- Operational Funds
  The Board also requires operational funding. The priority item is to secure a statewide GIS Coordinator or Geographic Information Officer to serve as a project/program manager to oversee the Board's programs, to assist in statewide GIS coordination and to introduce Board initiatives across the State to the citizens of Maine. In addition to that person, an additional person is required assist in capturing the geospatial data required from communities across the State for ILRIS. This person can also work with local governments and state agencies to acquire other geospatial data that can be included to

support the portal for users across the State. Other operational funding requested by the CIO includes covering the costs expended by MEGIS on a continuing basis to support the GeoLibrary.

- Grant Opportunities
  Although grant opportunities that are applicable to the needs of the GeoLibrary aren't as numerous as they once were, there are still several that should be closely considered. Most require an investment with state funds or "in-kind" service. Nevertheless where these grant programs line up with the needs of Maine, they should be taken advantage of. One such opportunity is the Federal Geographic Geospatial data Committee's 2009 NSDI Cooperative Agreements Program. As explained by the State's USGS liaison, the following grant categories are directly applicable and should be considered. In all they would provide $75,000 in federal program funds with an investment of $25,000 by the State and should be pursued.

FGDC Cooperative Agreement Program
Recommended Grants

Grant Category	Description	Program Value	Federal Grant	State Match
CAP 1	Metadata Trainer and Outreach Assistance	$ 37,500	$ 25,000	$ 12,500
CAP 6	FGDC Standards Development and Implementation Assistance and Outreach	$ 37,500	$ 25,000	$ 12,500
	Total:	**$ 75,000**	**$ 50,000**	**$ 25,000**

Accordingly, a GeoLibrary subcommittee has decided to pursue Category 1 funds to provide direct support and metadata training for regional organizations and municipalities ready to list their geospatial data in the portal. They also agreed to apply for Category 6 to formally align the GeoLibrary parcel standard with the national cadastral standard.

Current digital orthoimagery is one of the most sought after and cost effective geospatial datasets that can be acquired on a statewide basis. In order to take full advantage of funding provided by the USGS National Digital Orthophoto Program and the National Geospatial Intelligence Agency's 133 Cities Program, the State should design its new program to be able to take advantage of NSGIC's Imagery for the Nation Program (IFTN) to insure funding in later years. As was discussed in this study's meeting with the federal government representatives (refer to Appendix N), the Department of Agriculture has modified its program to provide "leaf on" ortho photography every other year. Because such a large extent of Maine is considered agricultural land, the State can purchase 4-band imagery for the entire State for approximately $125,000

through the National Agriculture Imagery Program. While this may not ideally meet all the needs of the State, it provides very inexpensive statewide coverage on a regular basis and should be closely considered.

- Other Funding Options
  Undoubtedly, additional funding will be required to implement the Integrated Land Records Information System. Ideally, this would come from a recurring source based on the system's use. If such a source were used, it would seem logical that some of its funding should be allocated for the development and maintenance of framework geospatial data such as digital orthoimagery and high resolution elevation geospatial data that would be required to accurately maintain the land records geospatial data. Similar examples are available from states like Virginia where part of the E-911 surcharge is made available for digital orthoimagery and other geospatial data used to support their E-911 services and shared with the state geospatial community. In Maine's case, where E-911 is a heavy user of the digital orthoimagery and, potentially, much other geospatial data, the Sewall Team recommends exploring the potential for increasing the E-911 surcharge to provide an annual program to keep the state's framework data up-to-date to insure that responders are equipped with accurate information to assist them in saving lives and property.

  Lastly, recognizing that the GIS Coordinator noted under the operational funding above) is key to the successful implementation of the GeoLibrary's programs, the Board should explore all options available. If acquiring a full-time equivalent position (FTE) is not possible, other options could include contracting for such services or seeking assistance from the Governor's Office to obtain project management staff through a loan from another state agency. In any case, selection of the proper person for this position is of utmost importance.

6.6 Marketing the Program

It is clear that the Board must turn much more of its concentration on communicating to the decision makers, geospatial community and citizens of Maine to insure the success of its current and future programs.

While the GeoLibrary Board has been fully involved in frugally spending its bond monies by providing parcel grants to 74 communities across the State and bringing digital orthoimagery, the Orthoimagery Viewer and the Geospatial data Catalog to the entire Maine geospatial community, it has placed limited emphasis in marketing its initiatives and programs. This has given rise to a couple of issues. First of all, knowledge of who the Board is and what it has brought to Maine is very limited. As a result, the Board is greatly challenged to obtain additional funds to continue with its essential work. Second, the Board's initiatives, themselves, could benefit from additional, coordinated campaigns to educate potential users across the State on how to take the greatest advantage of them. With the advent of the Board's exceptional portal, a significant campaign must be taken to promote both its use and encouraging targeted geospatial data developers to provide geospatial data and metadata to it. This will not only improve geospatial data sharing and

the ease of use of GIS for the state, but it will also provide an opportunity the Board to demonstrate its work in Maine.

Although some may take umbrage at the use of the term "marketing" by a government entity such as the Board, it is clear that it must turn much more of its concentration on communicating to the decision makers, geospatial community and citizens of Maine to insure the success of its current and future programs. **To assist the Board in achieving that, the Sewall Team has provided a Communications Plan.** The goals of this plan are to both demonstrate how the Board is making a difference in Maine and increase the support for the Board's initiatives. It involves establishing an active work group to provide the details on how the plan will best be implemented. The plan, itself, includes establishing an annual schedule of presentations and meetings by Board members across the State, growing the List Serve, upgrading the web site, establishing monthly "News Blips," and reporting to constituencies and obtaining input from the Maine geospatial community on a continual basis. Details of the plan are available in Appendix E.

6.7 Measuring Success and Recalibration

This plan has resulted from a number months of input from users, analysis, feedback on that analysis and proposals to meet goals and objectives. While proposals for priorities and orders of precedence have been made in the report, the details should be ultimately left to the chief implementers – a statewide GIS coordinator and those participating on the work groups. While the time frames given for the deliverables are realistic, some variations should be allowed. Approximately nine months after this process begins, an independent review of its success should be completed. In starting out, goals can be established for the:

- Number of folks on list serve.
- Number of geospatial data sets in portal, Geospatial data Catalog and the GeoLibrary website.
- Number of folks who have been trained on the portal.
- Number of hits on the portal.
- Number of presentations made to different conferences, legislators, legislative committees, and other groups.
- Amount of funds received.
- Deliverables received from the work groups and committees.

In addition to the above, an on-line survey should be conducted to measure satisfaction and define changing needs. The Board should also consider conducting 3-4 listening sessions in different geographic regions of the State. Results from the metrics, survey and listening sessions should be analyzed and provided to the Board. That information should become the basis for an annual 1-day Board planning session in which the Board reviews progress and examines ways for improvement. At that time, it should determine what, if any, modifications in the plan are needed and establish its goals/objectives/ deliverables for next 12 months. It should conclude by reporting back to the Maine geospatial community what the findings are and how it is using them to shape its actions.

7. FUTURE PLANS

Planning should be considered a continual process. As Allan Lakein puts it, "Planning is bringing the future into the present so that you can do something about it now."

As noted above, an interim check of progress and adjustments needed should be conducted annually using metrics gathered by the Board and direct input from the Maine geospatial community. Furthermore, because technology and user needs change rapidly, it's prudent to conduct a full strategic planning process every three to five years. While these can be conducted in-house by the Board, the success rate of such work is improved when an outside facilitator provides the services.

The recommended plan contains some very significant items. Because of that, certain initiatives have not been included, it should be pointed out that there is a need for other geospatial data as well. This is detailed in Appendices L & M. Should the opportunity arise to obtain this geospatial data by virtue of a unique funding program or otherwise, the Board should not hesitate to pursue it. In addition, given the current economic climate, the Sewall Team did not recommend establishing regional service centers included under Pillar 3 of the 2002 Strategic Plan. It, instead, chose a more cost effective approach by suggesting that generic templates be created using the new portal's web services at this time. This should be considered as a pilot project for providing cost effective GIS services of various communities, not-for-profits, and other organizations across the State. Once this has been developed and piloted with some municipalities, the approach should be re-evaluated along with the cost/benefit of regional service centers to determine the most valid approach.

A SPECIAL NOTE OF THANKS

The Strategic Planning and Integrated Land Records team of the GeoLibrary is grateful for all of the participation at interviews and forums throughout this geospatial data collection process by scores of individuals representing the full spectrum of public and private stakeholders inside and out of State.

8. APPENDICES

Appendices A-R are listed in a separate attachment and are integral to this document.